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विद्युत तकनीकी शब्दावली

भाग 77 शिरोपरि लाइनें

Indian Standard

ELECTROTECHNICAL VOCABULARY

PART 77 OVERHEAD LINES

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NATIONAL FOREWORD

This Indian Standard (Part 77) which is identical with IEC Pub 50 (466) (1990) 'International electrotechnical vocabulary — Chapter 466 : Overhead lines', issued by the International Electrotechnical Commission (IEC), was adopted by the Bureau of Indian Standards on the recommendation of the Basic Electrotechnical Standards Sectional Committee and approval of the Electrotechnical Division Council.

Only the English text given in the IEC publication has been retained while adopting as Indian Standard, and as such the page numbers given here are not same as in IEC publication.

Indian Standard
ELECTROTECHNICAL VOCABULARY
PART 77 OVERHEAD LINES
SECTION 466-01 — GENERAL TERMS

466-01-01

(electric) line

An arrangement of conductors, insulating materials and accessories for transferring electricity between two points of system.

466-01-02

overhead line

An electric line whose conductors are suported above ground, generally by means of insulators and appropriate supports.

Note. — Certain overhead lines may also be constructed with insulated conductors.

466-01-03

a.c. line

A line connected to an alternating current source of supply or connecting two alternating current networks.

466-01-04

phase (of an a.c. line)

The designation of any conductor, or bundle of conductors, of a polyphase a.c. line which is intended to be energized under normal use.

466-01-05

d.c. line

A line connected to a direct current source of supply.

466-01-06

pole (of a d.c. line)

The designation of a conductor, or bundle of conductors, of a d.c. line which is intended to be energized under normal use.

466-01-07

circuit (of an overhead line)

A conductor or system of conductors through which an electric current is intended to flow.

466-01-08

single circuit line

A line comprising one circuit.

466-01-09

double circuit line

A line comprising two circuits not necessarily at the same voltage and frequency installed on the same support.

466-01-10

multiple circuit line

A line comprising several circuits not necessarily at the same voltage and frequency installed on the same support.

466-01-11

monopolar line

A direct current line in which only one pole connects the load to the supply, the return path being through earth.

466-01-12

bipolar line

A direct current line in which the two poles connect the load to the supply.

466-01-13

transmission line

A line which is part of an electric power transmission system.

466-01-14

distribution line

A line which is used for the distribution of electricity.

466-01-15

conductor (of an overhead line)

A wire or combination of wires not insulated from one another, suitable for carrying an electric current.

466-01-16

conductor vibration

The periodic motion of a conductor.

466-01-17

aeolian vibration

The periodic motion of a conductor induced by the wind predominantly in a vertical plane, of relatively high frequency of the order of ten or tens Hz and small amplitude, of the order of the conductor diameter.

466-01-18

subspan oscillation

The periodic motion of one or more sub-conductors predominantly in a horizontal plane, of intermediate frequency of the order of a few Hz and amplitude of the order of the conductor spacing in the bundle.

466-01-19

conductor galloping

A periodic motion of a conductor, or bundle, predominantly in a vertical plane of low frequency of the order of a fraction of one Hz and high amplitude, whose maximum value can be of the same order as the original sag.

SECITON 466-02 –MECHANICAL DESIGN

Note — In this section, the expression "load", "loading" refer to mechanical forces applied to a component of a line.

466-02-01

loading assumptions

A set of loading conditions, resulting from national standards or statutory regulations or from a study of meteorological data, which are used for designing each element of a line.

466-02-02

loading case

The combination, or set, of loads applied to an element of a line for a particular loading assumption.

466-02-03

working load

The load derived from the specified loading assumptions excluding factors of safety or overload factors.

466-02-04

normal load

primary load

Load resulting from the action of the wind and of gravity on wires, insulators and supports with or without ice accretion.

466-02-05

special load

Load produced by the reasonable activities of construction and maintenance personnel, and/or that resulting from the failure of some component of a line.

466-02-06

legislative load

The load prescribed by local or national regulating bodies.

466-02-07

test load

The load applied to an element or elements of an overhead line for testing purposes.

466-02-08

failure load

The load which causes failure to occur in any element.

466-02-09

ultimate design load

The load which all elements should just sustain without failure, during any specified duration.

466-02-10

vertical load

The vertical components of any load applied at a given point of the support in a three-dimensional system of co-ordinates related to the support.

466-02-11

longitudinal load

The longitudinal components of any load applied at a given point of the support in a three-dimensional system of co-ordinates related to the support.

466-02-12

transverse load

The transverse components of any load applied at a given point of the support in a three-dimensional system of co-ordinates related to the support.

466-02-13

wind load

The horizontal load resulting from wind pressure applied to any element of the overhead line, with or without ice loading.

466-02-14

ice loading

The additional load resulting from ice accretion on any element of the line.

466-02-15

uniform ice loading

The ice load uniformly distributed over the length of each conductor and earthwire on all the spans of a section of line.

466-02-16

non-uniform ice loading

The load due to uneven ice loading along conductors or earthwires in a section of a line.

Note.. — This may result from non-uniform accumulation, or non-uniform detachment of ice from the conductors or earthwires.

SECITON 466-03 — SPANS

466-03-01

span

The part of a line between two consecutive points of support of a conductor.

466-03-02

span length

The horizontal distance between the attachment points of the conductor on two consecutive supports.

466-03-03

level span

A span in which the attachment points of the conductor on two consecutive supports are nearly in the same horizontal plane.

466-03-04

sloping span

inclined span

A span in which the attachment points of the conductor on two consecutive supports are not in the same horizontal plane.

466-03-05

difference in levels

The vertical distance between the two horizontal planes passing through the attachment points of the conductor of an inclined span.

466-03-06

sloping span length

The distance between the attachment points of the conductor on two consecutive supports (see fig.1).

466-03-07

wind span

The horizontal distance between the points at mid-span on each side of a support.

466-03-08

weight span

The horizontal distance between the lowest points of a conductor on either side of a support.

Note — In steeply sloping terrain, the lowest points of the catenary curves of both adjacent spans can be on the same side of the support.

466-03-09

...

The vertical distance between two horizontal planes, one through the highest point of support of the conductor in a span, and the other, tangential to the lowest point of the conductor curve.

Note . — This lowest point may be imaginary (see fig.1).

466-03-10

sag

The maximum vertical distance in a span of an overhead line between a conductor and the straight line joining its points of supports (see fig.1).

466-03-11

section (of an overhead line)

A part of a line between two tension supports.

466-03-12

equivalent span

ruling span

A fictitious single span in which tension variations due to load or temperature changes are nearly the same as in the actual spans in a section.

Note. — The approximate value a_c of the equivalent span is calculated from:

$$a_c \simeq \sqrt{\frac{\Sigma a_i^3}{\Sigma a_i}}$$

where a_i is the length of the span i in the section.

466-03-13

catenary

The shape of the curve assumed by a perfectly flexible, inextensible cord suspended at its ends, and given by the equation:

$$Y = \rho\left(\mathrm{Cosh}\frac{X}{\rho} - 1\right)$$

In practice, the simple parabola is often used,

$$Y = \frac{1}{2\rho}X^2$$

which represents the first two terms of the series expansion of the equation of the catenary.

Note. — The catenary curve represents a cable with constant weight per unit of length of curve, while the parabola represents a wire with a constant weight per horizontal unit of length. The sag calculated by the parabolic equation is smaller than that calculated by the catenary equation. For long spans or for very sloping spans the parabolic approximation can introduce unacceptable errors.

466-03-14

catenary constant

The constant in the catenary and parabola equations, geometrically represented by the radius of curvature at the lowest point of the span.

Note. — The catenary constant ρ is equal to the quotient of the horizontal tension in the conductor T_0 at a given temperature (see fig.1) by its unit weight ω, which must take into account the ice or wind overloads, if applicable.

SECTION 466-04 — PROFILES

466-04-01

longitudinal profile

A representation of the ground contour in the vertical plane through the axis of the line (see fig. 1).

466-04-02

side slope at X metres

offset profile

A representation of the ground contour in the vertical plane located X metres from, and parallel to, the axis of the line (see fig. 1).

466-04-03

transverse profile

section profile

The profile in a vertical plane perpendicular to the axis of the line (see fig. 1).

466-04-04

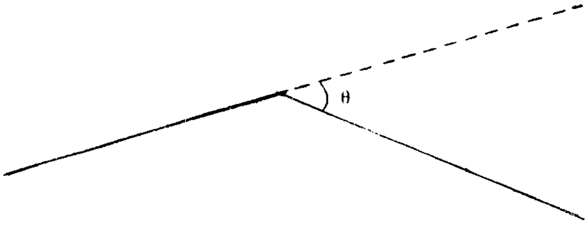
diagonal leg profile

The representation of the ground contour in the vertical plane containing diagonally opposite legs of a support.

466-04-05

line angle

The angular change in direction of a line at a support (θ).



SECTION 466-05 — CONDUCTOR ARRANGEMENTS

466-05-01

conductor configuration

The geometrical arrangment of the phase conductors in relation to the support.

466-05-02

horizontal configuration

A configuration in which all the phase conductors on a support are in the same horizontal plane.

466-05-03

semi-horizontal configuration

A variation of the horizontal configuration in which the centre phase is at a slightly higher or lower level than the outer phases.

466-05-04

triangular configuration

A configuration in which the phase conductors of a circuit are located at the apexes of a triangle whose base is not necessarily horizontal.

466-05-05

delta configuration

A configuration in which the phase conductors of a circuit are located at the apexes of an isoceles triangle whose base is not necessarily horizontal.

466-05-06

vertical configuration

A configuration in which the phase conductors of a circuit are located virtually in the same vertical plane.

466-05-07

semi-vertical configuration

A variation of the vertical configuration in which the centre phase is horizontally offset.

466-05-08

double circuit vertical configuration

A configuration in which each of the two circuits, in vertical formation, is located on either side of the support.

466-05-09

double circuit semi-vertical configuration

A variation of the double circuit vertical configuration in which the centre phases are horizontally offset.

466-05-10

transposition

A change of the relative positions of the phase conductors of a line.

Note — The transposition is carried out in order to establish adequate electrical symmetry of the conductors one to another or with respect to earth or with respect to neighbouring systems.

466-05-11

transposition interval

Length of line between two successive transpositions.

466-05-12

ground clearance

The minimum distance, under specified conditions between any live parts and the ground.

466-05-13

phase-to-earth clearance

The minimum distance, under specifieds conditions, between any live parts and all structures at earth potential.

466-05-14

clearance to obstacles

The minimum distance, under specified conditions, between any live parts and any obstacle at earth potential.

466-05-15

phase-to-phase spacing

The distance between the axes of two adjacent line conductors, or bundles of line conductors, of adjacent phases.

466-05-16

angle of shade

shielding angle (USA)

The angle between the vertical plane through the earth wire and a plane through the earth wire and the conductor to be protected against lightning strokes.

466-05-17

minimum angle of shade

minimum shielding angle (USA)

The angle within which the line conductors must lie in order to obtain a desired degree of protection against lightning strokes.

SECTION 466-06 — SUPPORTS

466-06-01

support

structure (of an overhead line)

A device designed to carry, through insulators, a set of conductors of a line.

466-06-02

intermediate support

tangent support (deprecated)

A support located on an essentially straight line portion of an overhead line route, where the conductors are attached by suspension, pin or line post insulators.

466-06-03

angle support

A support located at a point where the route of the line, in the horizontal plane, changes substantially in direction.

466-06-04

flying angle support

running angle support

A support used on small or medium angles of deviation of the route, the conductors being attached by suspension-type insulator sets.

466-06-05

tension support

angle support

strain support (USA)

A support to which the conductors or bundles are attached through tension insulator sets.

Note — The loads due to the adjacent spans are considered as being applied independently to the attachment points.

466-06-06

terminal support

A support designed to terminate the line tension of conductors on one side.

466-06-07

transposition sapport

A support designed to permit the change of the relative position of the phases along the route of a line.

466-06-08

stay

guy (USA)

A steel wire rope or rod, working under tension, connecting a point of a support to a separate anchor, or connecting two points of the supports.

466-06-09

stayed support

guyed support (USA)

A support whose stability is ensured by stays.

466-06-10

self-supporting support

A support having intrinsic stability, without the use of stays.

SECTION 466-07 — POLES AND BRACKETS

466-07-01

pole

A vertical single member support in wood, concrete, steel or other material, with one end buried in the ground, either directly or by means of a foundation.

466-07-02

portal support

"H"pole

"H" frame (USA)

A H shaped support comprising two spaced vertical main legs with a horizontal crossarm near the top.

466-07-03

bracket

A small fitting attached to the outside of a building, or to any other construction.

466-07-04

"A"pole

"A" frame (USA)

A double-member support in which the tops of each member are shaped, keyed and bolted together as at the apex of the letter "A" and are joined by a common cross-block.

SECTION 466-08 — TOWERS

466-08-01

tower

A support which may be made of such material as steel, wood, concrete and comprising a body which is normally four-sided, and cross-arms.

466-08-02

lattice tower

A compound structure resulting from an assembly of structural members.

466-08-03

bracing system

lacing system

Arrangment of the members in a lattice support.

466-08-04

single warren

single lacing

A bracing system executed according to figure 2.1.

466-08-05

double warren

double lacing

A bracing system executed according to figure 2.2.

466-08-06

triple warren

triple lacing

A bracing system executed according to figure 2.3.

466-08-07

K bracing

K panel

A bracing system executed according to figure 2.4.

466-08-08

double warren redundant support

double lacing redundant support

A bracing system executed according to figure 2.5.

466-08-09

top hamper

super structure

The upper part of a tower (see fig. 3.1).

466-08-10

earth wire peak

overhead ground wire peak (USA)

A component which is part of a top hamper of a tower and illustrated by figure 3.11.

466-08-11

beam gantry

bridge

girder

An horizontal element of a portal support or a tower which is designed for the attachment of the conductors (see fig. **3.12**).

466-08-12

crossarm

A component which is part of a top hamper of a tower and illustrated by figure 3.13

466-08-13

fork

"K" frame

A component which is part of a top hamper of a tower and illustrated by figure **3.14**.

466-08-14

plan bracing

diaphragm

A set of structural members contained in the same horizontal plane (see fig. 3.21).

466-08-15

tower body

The vertical portion of a tower (see fig. 3.2).

466-08-16

waist

The plan bracing defining the limit between the body and the top hamper of a tower (see fig. 3.15).

466-08-17

main bracing

A tower member illustrated by figure 3.22.

466-08-18

redundant bracings

secondary bracings

Tower members illustrated by figure 3.23.

466-08-19

main leg

A tower member illustrated by figure 3.24.

466-08-20

leg slope

An angle defining the inclination of a main leg (see fig. 3.25).

466-08-21

node

panel point

A point of concurrence of several members in a tower (seem fig. 3.26).

466-08-22

anti-climbing guard

anti-climbing device

A device installed on, or attached to, a support, structure, tower, guy, etc...to make climbing difficult by unauthorised persons (see fig. 3.27).

466-08-23

foot

footing

A part of a tower at the limit between the body and the foundation (see fig. 3.30).

466-08-24

hill-side extension

leg extension

A portion added at the base of a tower designed to suit the body and used to compensate for variations in levels on hill-sides (see fig. 3.31)

Note — Leg extension can also be used to adjust the height of a tower.

466-08-25

body extension

Portion of a tower body which can be added to the lowest part of a given tower to increase its height.

SECTION 466-09 — FOUNDATIONS

466-09-01

foundation

A structure set in the ground, to which the base of a support is attached to provide the necessary anchorage to withstand all applied loads.

466-09-02

block foundation

A foundation consisting of a single block of concrete, into which the leg(s) of the support or anchor bolts are embedded.

466-09-03

separate footing foundations

Foundation specifically designed to withstand the loads transmitted by each leg of a support.

466-09-04

pad and chimney foundation

spread footing with pier (USA)

A foundation consiting of a bottom pad anchoring it to the surrounding soil and of a narrower chimney ensuring proper connection with the stub or anchor bolts of the support (see fig. 4).

466-09-05

stub (of a support)

An element used to connect the leg of a support with the foundation (see fig. 4.1).

466-09-06

chimney (of a foundation)

pier (of a foundation)(USA)

The narrow portion of a foundation in which the stub is embedded (see fig. 4.5).

466-09-07

muff

reveal (USA)

That part of the chimney above ground level, normally shaped as a pyramid to facilitate water drainage (see fig. 4.2).

466-09-08

pad (of a foundation)

The wide portion of a foundation, embedded in the soil to ensure proper distribution of the load (see fig. 4.8).

466-09-09

excavation

A hole made in the ground for installing a foundation (see fig. 4.4).

466-09-10

backfill

The soil removed during excavation and re-instated after the installation of the foundation (see fig. 4.3).

466-09-11

imported backfill

Soil or other material placed in an excavation after the installation of the foundation, when the original soil is unsuitable.

466-09-12

reinforcing rods (in a pad and chimney foundation)

Metallic rods embedded in concrete to ensure proper connection between chimney and pad (see fig. 4.6).

466-09-13

cleat (in a pad and chimney foundation)

A device attached to the stub for the purpose of reinforcing its connection to the foundation (see fig. 4.9).

466-09-14

bell

undercut

The peripheral portion of an excavation which is undercut to ensure that the concrete poured for the pad bears against undisturbed soil (see fig. 4.7).

466-09-15

grillage foundation

A type of foundation in which the tower or the stub is connected to a lattice work buried in the ground.

466-09-16

pile foundation

A long slender foundation installed without excavation.

466-09-17

driven pile

A column sunk into the ground by hammering or vibrations without previous excavation.

466-09-18

augered pile

bored pile

A foundation type in which a long cylindrical hole is first bored out of the ground and then filled in wih concrete into which the stub is embedded.

466-09-19

pressure injected pile

A pile in which concrete is poured into the bored or augered hole under pressure to achieve a better contact with undisturbed soil.

466-09-20

expanded pile

bulb pile

under-reamed pile

An augered pile whose excavation is widened at the lower end.

466-09-21

anchor rod

A rod or other metallic element, connecting the stay, or guy, to the anchor.

466-09-22

anchor

A device, usually buried in the ground, so installed as to provide a firm point of attachment for resisting uplift.

SECTION 466-10—BARE CONDUCTORS

466-10-01

solid conductor

A conductor consisting of a single wire.

466-10-02

wire

strand

One of the individual wires used in the manufacture of a stranded conductor.

466-10-03

stranded conductor

A conductor consisting of a number of individual uninsulated wires laid up together in alternating left- and right-hand helical layers.

466-10-04

layer

In a stranded conductor, that group of wires, arranged to form a cylinder of constant radius, with the same axis as the conductor and having the same direction and length of lay.

466-10-05

length of lay

The axial length of one complete turn of the helix of a wire in a stranded conductor.

466-10-06

lay ratio

lay factor

The ratio of the length of lay to the diameter of the helix.

466-10-07

direction of lay

The direction of twist of a layer of wires of a stranded conductors as viewed from the end.

Note — A "right-hand lay" is a clockwise direction and a "left-hand lay" is an anti-clockwise direction.

466-10-08

smooth body conductor

segmental or locked coil conductor

A conductor with a relatively smooth surface obtained by using, for the outer layer, wires whose shape is that of a radial section of an annulus (segmental), or whose shape prevents them from having any radial movement (locked coil).

466-10-09

hollow conductor

A tubular conductor made up of wires or segments helically stranded sometimes around reinforcing wires.

466-10-10

expanded conductor

A conductor in which some of the internal wires have been omitted, or replaced by non-metallic, lighter wires to obtain an increase in diameter.

466-10-11

All aluminium conductor

AAC (abbreviation)

A stranded conductor, of which all wires are made of aluminium.

466-10-12

all aluminium alloy conductor

AAAC (abbreviation)

A stranded conductor of which all wires are made of aluminium alloy.

466-10-13

reinforced conductor

A stranded conductor containing wires of two different materials to obtain enhanced mechanical characteristics.

466-10-14

steel reinforced aluminium conductor

ACSR (abbreviation)

A reinforced conductor with one or more layers of aluminium wires stranded around a core of galvanised steel wires.

466-10-15

steel reinforced aluminium alloy conductor

AACSR (abbreviation)

A reinforced conductor with one or more layers of aluminium alloy wires stranded around a core of galvanised steel wires.

466-10-16

aluminium clad steel reinforced aluminium conductor

ACSR/AC (abbreviation)

A reinforced conductor comprising aluminium wires with one or more aluminium-clad steel wires disposed symmetrically within the conventional stranding configuration.

466-10-17

alloy reinforced aluminium conductor

ACAR (abbreviation)

A reinforced conductor comprising aluminium wires with one or more aluminium alloy wires disposed symmetrically within the conventional stranding configuration.

466-10-18

core (of a reinforced conductor)

The centre wire or inner layers of the higher strength material in a reinforced conductor.

Note — The proportion of strength contributed by the core may be greater or smaller than that contributed by the conducting outer aluminium or aluminium alloy layers.

466-10-19

single conductor

A conductor constituting by itself one phase or one pole of a line.

466-10-20

conductor bundle

Set of individual conductors connected in parallel and disposed in a uniform geometrical configuration, that constitutes one phase or pole of a line.

466-10-21

sub-conductor (of a bundle)

Any one of the individual conductors in a conductor bundle.

466-10-22

twin bundle

two-conductor bundle (USA)

A conductor bundle consisting of two sub-conductors.

466-10-23

triple bundle

three-conductor bundle (USA)

A conductor bundle consisting of three sub-conductors.

466-10-24

quad bundle

four-conductor bundle (USA)

A conductor bundle consisting of four sub-conductors.

Note — An analogous term can be used in the case of more than four sub-conductors.

466-10-25

earth wire

shield wire

overhead ground wire (USA)

A conductor connected to earth at some or all supports, which is suspended usually but not necessarily above the line conductors to provide a degree of protection against lightning strokes.

466-10-26

jumper

A short length of conductor, not under mechanical tension, making an electrical connection between two separate sections of a line.

466-10-27

counterpoise

A conductor, or system of conductors, buried in the ground and connected to the footings of the supports of the line.

SECTION 466-11 — CONDUCTOR FITTINGS

466-11-01

spacer

A device which keeps the sub-conductors of a bundle in a given geometrical configuration.

466-11-02

spacer damper

A flexible or semi-rigid spacer which reduces aeolian vibrations and subspan oscillations of the sub-conductors.

466-11-03

mid-span tension joint

A joint inserted between two lengths of a conductor to provide electrical and mechanical continuity of the conductor.

Examples:

Drawn type midspan joint (figure 5.1)

Compression type midspan joint (figure 5.2)

Cone type midspan joint (figure 5.3).

466-11-04

dead-end tension joint

A joint inserted at the end of a conductor for attachment to an insulator tension set, designed to carry the full current and to provide mechanical termination of the conductor.

466-11-05

jumper flag

jumper lug

The part of a joint or of another fitting which permits electrical continuity with another conductor.

466-11-06

jumper terminal

The termination of a conductor which permits an electrical continuity with a jumper lug (flag).

466-11-07

repair sleeve

A special fitting which can be installed over a damaged conductor in order to restore its electrical and mechanical properties.

466-11-08

clamp

Any fitting which can be fixed on to a conductor.

466-11-09

suspension clamp

A fitting which attaches a conductor to a suspension insulator set.

466-11-10

anchor clamp

tension clamp

dead-end clamp

A clamp which attaches a conductor to a tension insulator set or to a support, and designed to withstand the conductor tension.

466-11-11

pivot-type suspension clamp

A suspension clamp whose body can oscillate around a horizontal axis normal to the conductor.

466-11-12

body (of a suspension clamp)

That part of the supension clamp which supports the conductor.

466-11-13

suspension straps (of a suspension clamp)

That part of a suspension clamp which supports the body of the fitting.

466-11-14

trunnion (of a pivot-type suspension clamp)

The circular projection from the body of the clamp which acts as an axis of rotation within the straps, permitting some oscillation of the clamp.

466-11-15

suspension set weight

counterweight (to a suspension insulator set)

A mass attached to a suspension clamp to provide an increase in the vertical load applied to the clamp.

Note. — The effect of the counterweight is to reduce the angle of swing of the suspension insulator set under the influence of wind or in the case of flying angle supports. It also prevents radio-interference caused by bad contacts between metallic parts.

466-11-16

vibration damper

A device attached to a conductor or an earth wire in order to suppress or minimize vibrations due to wind.

466-11-17

night warning light (for conductor)

A device which becomes luminous generally by capacitive induction from the live conductor to which it is attached.

466-11-18

aircraft warning marker (for conductor and earth wire)

A warning device visible during the day, used on conductors or earth wires.

466-11-19

armour rods

A set of protective metal rods wound helically around a conductor at the suspension point, preformed and placed prior to the installation of the suspension clamp.

466-11-20

patch rods

A set of preformed metal rods, wound helically around a conductor over damaged areas to restore the electrical properties of the conductor.

SECTION 466-12 — INSULATOR SETS — ACCESSORIES

466-12-01

insulator string

Two or more string insulator units coupled together and intended to give flexible support to overhead line conductors. An insulator string is stressed mainly in tension.

466-12-02

insulator set

An assembly of one or more insulator strings suitably connected together, complete with fixing and protective devices as required in service.

466-12-03

suspension set

suspension assembly (USA)

An insulator set complete with all fittings and accessories to support a conductor or a bundle of conductors at its lower end.

466-12-04

tension set

dead-end assembly (USA)

An insulator set complete with all fittings and accessories to secure a conductor or a bundle of conductors in tension.

466-12-05

U-bolt

A fitting in the form of a U attached to a support. (see figure 466-6).

466-12-06

dropper

swinging bracket (USA)

A fitting whih lowers the upper attachment point of a suspension set. (see figure 466-7).

466-12-07

tower swivel clevis

A fitting free to rotate around an axis and attached to the steelwork of a support (see figure 466-8).

466-12-08

yoke plate

A special fitting for the attachment of several insulator strings or other parallel elements. (see figure 466-9).

466-12-09

insulator protective fitting

A metallic accessory, installed either at the line end, at the earth end or at both ends of an insulator set for the purpose of electrical protection.

466-12-10

arcing horn

A protective fitting in the shape of a horn.

466-12-11

arcing ring

A protective fitting in the shape of a ring.

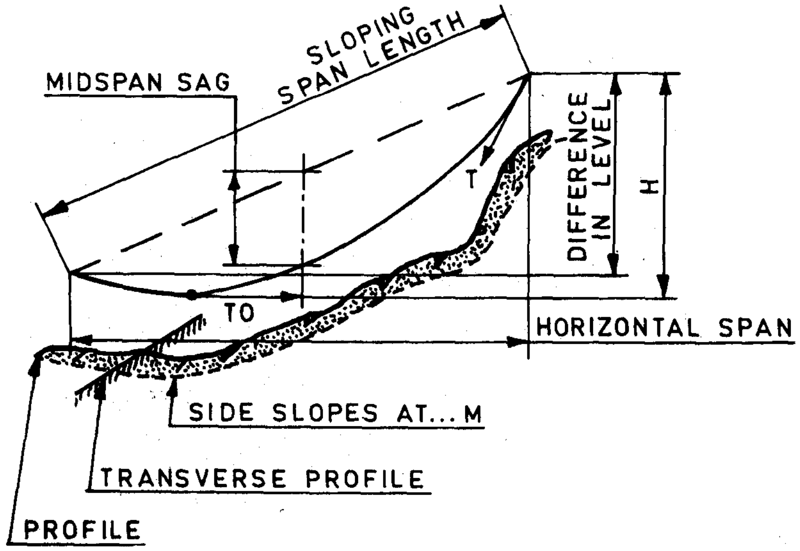
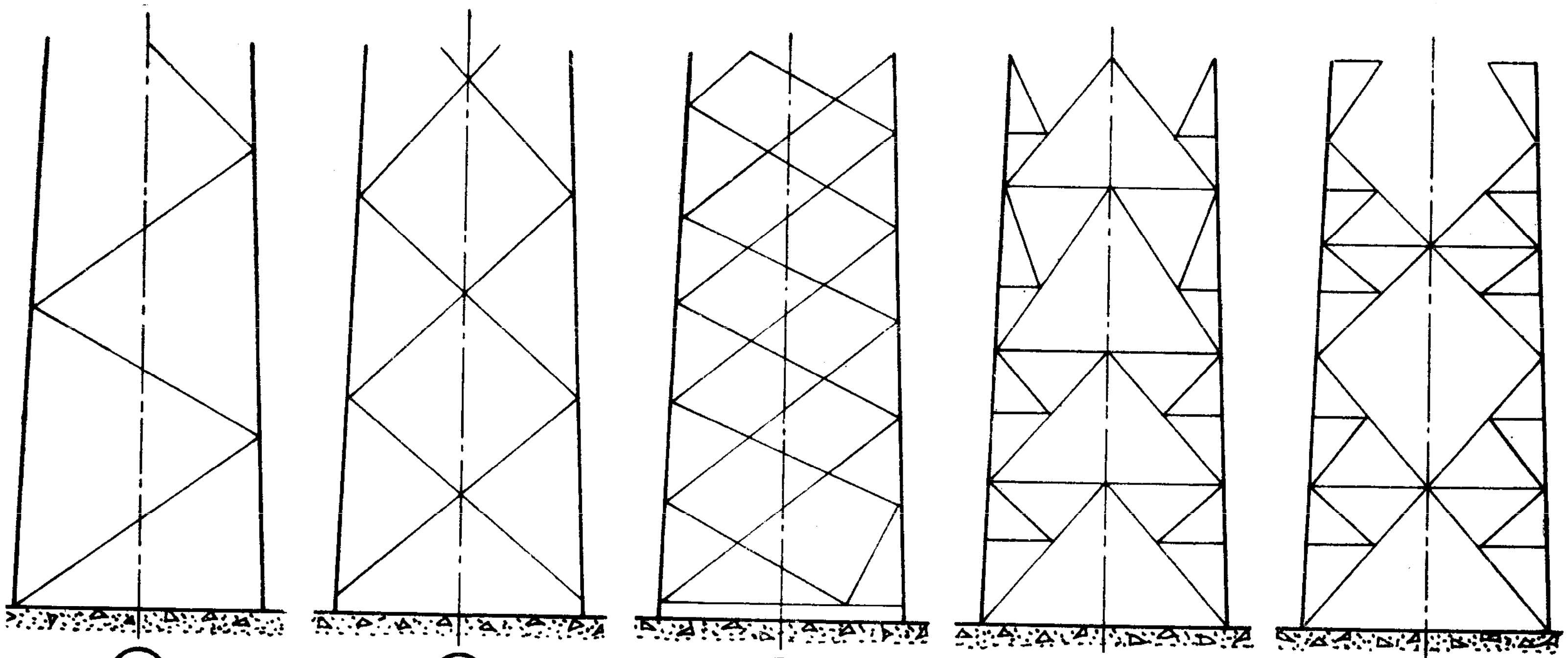


FIG. 1 SLOPING SPAN



① SINGLE WARREN ② DOUBLE WARREN ③ TRIPLE WARREN ④ K BRACING ⑤ DOUBLE WARREN

Fig. 2

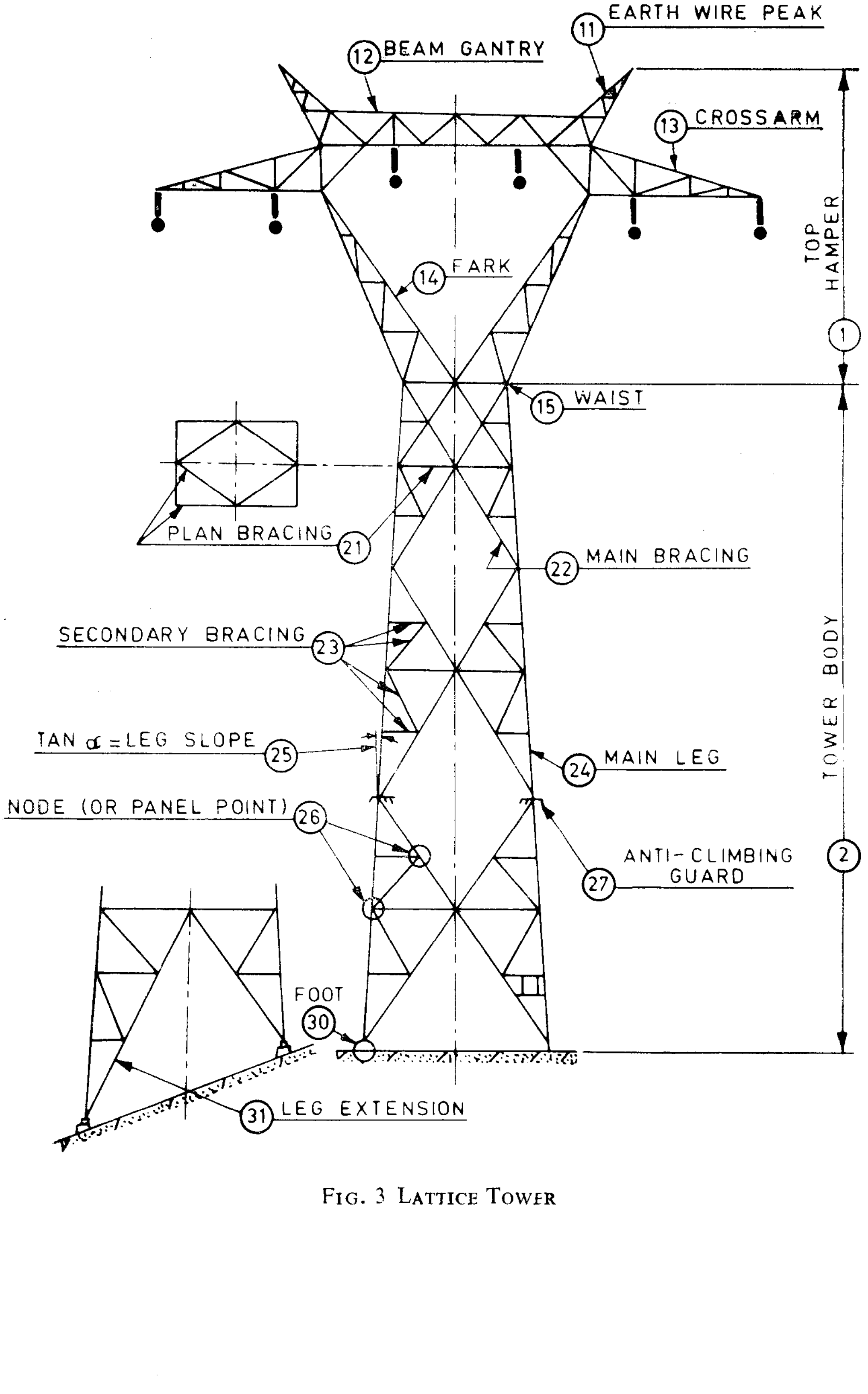


FIG. 3 LATTICE TOWER

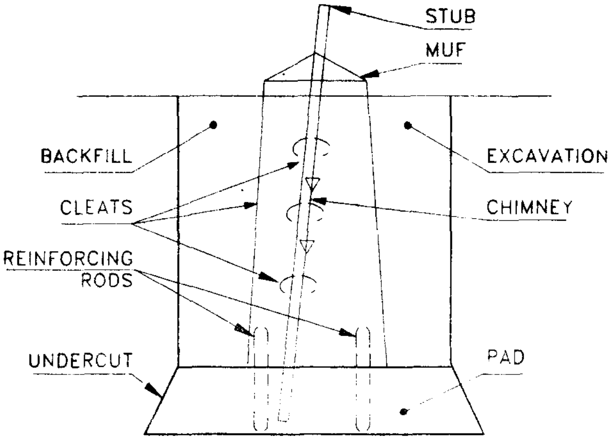
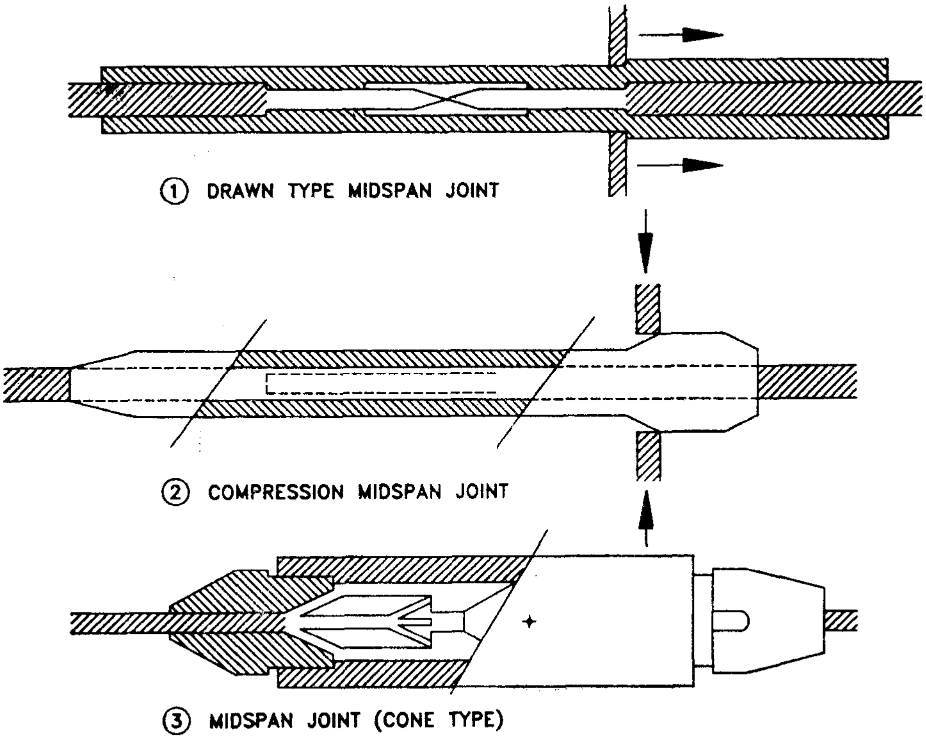


FIG. 4 PAD AND CHIMNEY FOUNDATION

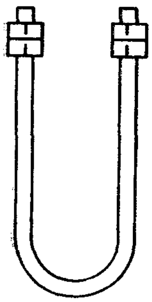


① DRAWN TYPE MIDSPAN JOINT

② COMPRESSION MIDSPAN JOINT

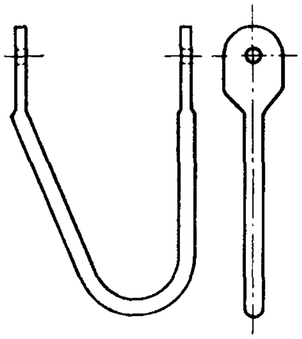
③ MIDSPAN JOINT (CONE TYPE)

FIG. 5 JOINTS



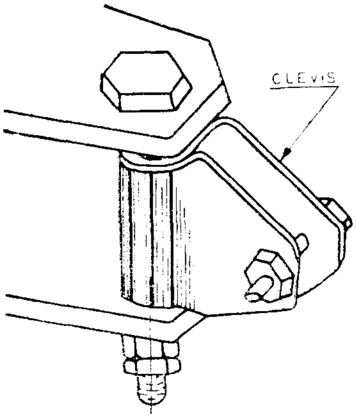
U-BOLT

FIG. 6



DROPPER

FIG. 7



SWIVEL CLEVIS

FIG. 8

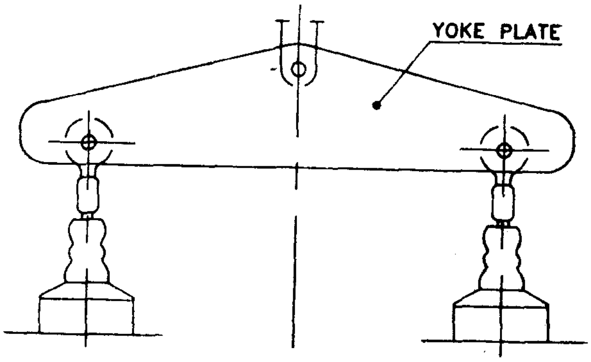


FIG. 9

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